

# SEQUENCE LISTING

<110> Inouye, Masayori  
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Suzuki, Motoo

<120> mRNA Interferases and Methods of Use Thereof

<130> University of Medicine & Dentistry of New Jersey (601-1-131PCT)

<140> 10/560,303

<141> 2005-12-12

<150> PCT/US2004/018571

<151> 2004-06-14

<150> 60/543,693

<151> 2004-02-11

<150> 60/478,515

<151> 2003-06-13

<160> 92

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<213> E. coli

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aacaaaacag gtatgtgtct gtgtgttcct tgtacaacgc aatcaaaagg atatccgttc 180
gaagttgttt tatccggtca ggaacgtgat ggcgtagcgt tagctgatca ggtaaaaagt 240
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<210> 2

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<212> PRT

<213> E. coli

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20     25     30
Val Leu Ser Pro Phe Met Tyr Asn Asn Lys Thr Gly Met Cys Leu Cys
35     40     45
Val Pro Cys Thr Thr Gln Ser Lys Gly Tyr Pro Phe Glu Val Val Leu
50     55     60
Ser Gly Gln Glu Arg Asp Gly Val Ala Leu Ala Asp Gln Val Lys Ser
65     70     75     80
Ile Ala Trp Arg Ala Arg Gly Ala Thr Lys Lys Gly Thr Val Ala Pro
85     90     95
Glu Glu Leu Gln Leu Ile Lys Ala Lys Ile Asn Val Leu Ile Gly
100    105    110
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 gttgttgtgc ccgtaaccag cggaggcaat tttgcccgcga ctgccggctt tgcgggtgtcg 180  
 ttggatggtg ttggcatacg taccacaggt gttgtacggt gcgatcaacc ccggacaatt 240  
 gatatgaaag cacggggcgg aaaacgactc gaacgggttc cggagactat catgaacgaa 300  
 gttcttggcc gcctgtccac tattctgact tga 333

<210> 4  
 <211> 110  
 <212> PRT  
 <213> E. coli

<400> 4  
 Met Glu Arg Gly Glu Ile Trp Leu Val Ser Leu Asp Pro Thr Ala Gly  
 1 5 10 15  
 His Glu Gln Gln Gly Thr Arg Pro Val Leu Ile Val Thr Pro Ala Ala  
 20 25 30  
 Phe Asn Arg Val Thr Arg Leu Pro Val Val Val Pro Val Thr Ser Gly  
 35 40 45  
 Gly Asn Phe Ala Arg Thr Ala Gly Phe Ala Val Ser Leu Asp Gly Val  
 50 55 60  
 Gly Ile Arg Thr Thr Gly Val Val Arg Cys Asp Gln Pro Arg Thr Ile  
 65 70 75 80  
 Asp Met Lys Ala Arg Gly Gly Lys Arg Leu Glu Arg Val Pro Glu Thr  
 85 90 95  
 Ile Met Asn Glu Val Leu Gly Arg Leu Ser Thr Ile Leu Thr  
 100 105 110

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 <211> 249  
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 <213> E. coli

<400> 5  
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 ttaatgcagg cgctcaatct gaatatgat gatgaagtga agattgacct ggtggatggc 120  
 aaattaatta ttgagccagt gcgtaaagag cccgtattta cgcttgctga actggtcaac 180  
 gacatcacgc cggaaaacct ccacgagaat atcgactggg gagagccgaa agataaggaa 240  
 gtctggttaa 249

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<400> 6  
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 1 5 10 15  
 Ile Pro Ala Thr Leu Met Gln Ala Leu Asn Leu Asn Ile Asp Asp Glu  
 20 25 30

Val Lys Ile Asp Leu Val Asp Gly Lys Leu Ile Ile Glu Pro Val Arg  
 35 40 45  
 Lys Glu Pro Val Phe Thr Leu Ala Glu Leu Val Asn Asp Ile Thr Pro  
 50 55 60  
 Glu Asn Leu His Glu Asn Ile Asp Trp Gly Glu Pro Lys Asp Lys Glu  
 65 70 75 80  
 Val Trp

<210> 7  
 <211> 258  
 <212> DNA  
 <213> E. coli

<400> 7  
 atgcatacca cccgactgaa gaggggttggc ggctcagtta tgctgaccgt cccaccggca 60  
 ctgctgaatg cgctgtctct gggcacagat aatgaagttg gcatgggtcat tgataatggc 120  
 cggctgattg ttgagccgta cagacgcccg caatattcac tggctgagct actggcacag 180  
 tgtgatccga atgctgaaat atcagctgaa gaacgagaat ggctggatgc accggcgact 240  
 ggtcaggagg aaatctga 258

<210> 8  
 <211> 85  
 <212> PRT  
 <213> E. coli

<400> 8  
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 20 25 30  
 Val Gly Met Val Ile Asp Asn Gly Arg Leu Ile Val Glu Pro Tyr Arg  
 35 40 45  
 Arg Pro Gln Tyr Ser Leu Ala Glu Leu Leu Ala Gln Cys Asp Pro Asn  
 50 55 60  
 Ala Glu Ile Ser Ala Glu Arg Glu Trp Leu Asp Ala Pro Ala Thr  
 65 70 75 80  
 Gly Gln Glu Glu Ile  
 85

<210> 9  
 <211> 24  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> T54 to K77 fragment of E. coli Maze

<400> 9  
 Thr Leu Ala Glu Leu Val Asn Asp Ile Thr Pro Glu Asn Leu His Glu  
 1 5 10 15  
 Asn Ile Asp Trp Gly Glu Pro Lys  
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<210> 10  
 <211> 18  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> N60 to K77 fragment of E. coli Maze

<400> 10  
 Asn Asp Ile Thr Pro Glu Asn Leu His Glu Asn Ile Asp Trp Gly Glu  
 1 5 10 15  
 Pro Lys

<210> 11  
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 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> synthetic RNA substrate

<400> 11  
 uaagaaggag auauacauau gaaucaaauc 30

<210> 12  
 <211> 50  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> single stranded oligonucleotide

<400> 12  
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<210> 13  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> single stranded oligonucleotide

<400> 13  
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<210> 14  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> synthetic oligonucleotide

<400> 14  
 agatctcgat cccgcaaatt aat 23

<210> 15  
 <211> 27  
 <212> DNA  
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<220>  
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<400> 15 ttagagatca atttcctgcc gttttac	27
<210> 16 <211> 22 <212> DNA <213> Artificial Sequence	
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<400> 19 ggttttgatt tgctcccaac gggcaag	27
<210> 20 <211> 27 <212> DNA <213> Artificial Sequence	
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<400> 20 catttcctcc tccagtttag cctggtc	27
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 <210> 22  
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 gcgttcgtcg tcggcccaac cgga 24  
  
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 <400> 26  
 gaaugauuc auauguauau cuccuucua 30  
  
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 <212> DNA

<213> Artificial Sequence  
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 <223> complementary DNA  
 <400> 27  
 gatttgattc atatgtatat ctccttctta 30  
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 <212> DNA  
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 <223> DNA primer  
 <400> 28  
 agaatgtgcg ccatttttca ct 22  
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 <210> 31  
 <211> 18  
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 <223> DNA fragment  
 <400> 31  
 catcatcatc atcatcat 18  
 <210> 32  
 <211> 12  
 <212> DNA  
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 <223> DNA fragment  
 <400> 32  
 atcgaaggta gg 12  
 <210> 33

<211> 60  
 <212> DNA  
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 <220>  
 <223> multiple cloning site  
  
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<210> 34  
 <211> 21  
 <212> DNA  
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 <220>  
 <223> DNA primer  
  
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 caggagauac cucaaugauc a

21

<210> 35  
 <211> 21  
 <212> DNA  
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<220>  
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<400> 35  
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21

<210> 36  
 <211> 21  
 <212> DNA  
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<220>  
 <223> DNA primer

<400> 36  
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21

<210> 37  
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 <212> DNA  
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<220>  
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<400> 37  
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16

<210> 38  
 <211> 23  
 <212> DNA  
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<220>  
 <223> DNA primer



<400> 38  
tgtcctctat ggagttacta gtg

23

<210> 39  
<211> 330  
<212> DNA  
<213> *Bacillus halodurans*

<400> 39  
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gaccaagccg ggacacgacc ggctattggt ttgtccccta aattatttaa taaaaacaca 120  
ggttttgcgg tggtttggtcc aattaccaga caacaaaaag gttatccttt tgaaatagaa 180  
ataccaccgg gggtacctat tgaaggggtt attcttactg accaagtaaa aagtctggat 240  
tggagagcaa gaaactttca cattaaagga caagcaccag aggaaactgt tactgattgt 300  
ttacaactta ttcatacatt tttatcttaa 330

<210> 40  
<211> 363  
<212> DNA  
<213> *Staphylococcus epidermidis*

<400> 40  
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gtaattgtag ctgcgattac tgatgggatt aataaagcga aaataccaac ccacgtagaa 180  
attgaaaaga aaaagtataa attagacaaa gattcagtta ttcttcttga acaaattaga 240  
acactagata aaaagcggtt aaaagaaaaa ttaacatttt tatcagagag taaaatgata 300  
gaggttgata atgccttaga tattagtttg ggattaaata actttgatca tcataaatct 360  
taa 363

<210> 41  
<211> 411  
<212> DNA  
<213> *Staphylococcus aureus*

<400> 41  
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gggggagtaa gacctgtagt cataattcaa aatgatactg gtaataaata tagtcctaca 120  
gttattgttg cggcaataac tggtaggatt aataaagcga aaataccgac acatgtagag 180  
attgaaaaga aaaagtataa gttggataaa gactcagtta tattattaga acaaattcgt 240  
acacttgata aaaaacgatt gaaagaaaaa ctgacgtact tatccgatga taaaatgaaa 300  
gaagtagata atgcactaat gattagttta gggctgaatg cagtagctca accagaaaaa 360  
ttaggcgtct attatatgta tttttcagag ataaataaaa tattgatata a 411

<210> 42  
<211> 351  
<212> DNA  
<213> *Bacillus subtilis*

<400> 42  
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caaggcgggg tgcgcccggg tttagtgtac caaatgaca tcggaaatcg cttcagccca 120  
actgctattg ttgcagccat aacagcacia atacagaaag cgaaattacc aaccacgctc 180  
gaaatcgatg caaaacgcta cggttttgaa agagattccg ttattttgct ggagcaaatt 240  
cggacgattg acaagcaaaag gttaacggat aagattactc atctggatga tgaaatgatg 300  
gataaggttg atgaagcctt acaaatcagt ttggcactca ttgattttta g 351

<210> 43  
<211> 324  
<212> DNA  
<213> *Neisseria meningitides*

<400> 43

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gaaatcaaaa agacacgtcc ttgtgtcgta gtctctcctc ctgaaatata caactatctc 120
aagactgtgc tgatcgttcc catgacgagc ggaagccgtc ctgccccgtt ccgcgtcaat 180
gtccgctttc aggataaaga cggtttgctt ttgcccgaac agattagggc tgtggataaa 240
gccggattgg tcaaacatct tggcaattta gacaacagta cggctgaaaa actgtttgca 300
gtattgcagg agatgtttgc ctga

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<210> 44

<211> 366

<212> DNA

<213> *Morganella morganii*

<400> 44

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tcgcttgacc ctaccgcagg tcatgagcag cagggaacgc ggccggtact gattgtcacg 120
ccggctgctt ttaaccgcgt gacccgcctg cctgttggtg tgcccgtgac cagcggaggt 180
aatittgccc gcacagcagg ctttgctgtg tcgcttgacg gcgccggcat acgtaccacc 240
ggcgttgatc gttgcgatca accccggacg atcgatatga aagcccgcgg cggcaaacga 300
ctcgaacggg tgccagagac tatcatggac gacgttcttg gccgtctggc caccatcctg 366
acctga

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<210> 45

<211> 321

<212> DNA

<213> *Mycobacterium tuberculosis*

<400> 45

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gtggtgattc ggggagcggc ctacagggtc gacttcggcg atgcgaagcg aggccacgag 60
caacgcgggc ggcgctacgc cgtggtcacg agccccggct cgatgccgtg gagtgtagta 120
accgtggatc cgacgtcgac aagcgcccaa cctgcgggtt tccgaccaga gctggaagtc 180
atgggaacaa agacacgggt cctgggtgat cagatccgga cgatcggcat cgtctatgtg 240
cacggcgatc cggtcgacta tctggaccgt gaccaaattg ccaagggtga acacgccgtg 300
gcacgatacc ttggtctgtg a

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<210> 46

<211> 109

<212> PRT

<213> *Bacillus halodurans*

<400> 46

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Met Pro Val Pro Asp Arg Gly Asn Leu Val Tyr Val Asp Phe Asn Pro
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Gln Ser Gly His Asp Gln Ala Gly Thr Arg Pro Ala Ile Val Leu Ser
20     25     30
Pro Lys Leu Phe Asn Lys Asn Thr Gly Phe Ala Val Val Cys Pro Ile
35     40     45
Thr Arg Gln Gln Lys Gly Tyr Pro Phe Glu Ile Glu Ile Pro Pro Gly
50     55     60
Leu Pro Ile Glu Gly Val Ile Leu Thr Asp Gln Val Lys Ser Leu Asp
65     70     75     80
Trp Arg Ala Arg Asn Phe His Ile Lys Gly Gln Ala Pro Glu Glu Thr
85     90     95
Val Thr Asp Cys Leu Gln Leu Ile His Thr Phe Leu Ser
100    105

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<210> 47

<211> 120

<212> PRT

<213> *Staphylococcus epidermidis*

<400> 47

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Met Ile Arg Arg Gly Asp Val Tyr Leu Ala Asp Leu Ser Pro Val Gln
1      5      10      15

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 20 25 30  
 Thr Gly Asn Lys Tyr Ser Pro Thr Val Ile Val Ala Ala Ile Thr Asp  
 35 40 45  
 Gly Ile Asn Lys Ala Lys Ile Pro Thr His Val Glu Ile Glu Lys Lys  
 50 55 60  
 Lys Tyr Lys Leu Asp Lys Asp Ser Val Ile Leu Leu Glu Gln Ile Arg  
 65 70 75 80  
 Thr Leu Asp Lys Lys Arg Leu Lys Glu Lys Leu Thr Phe Leu Ser Glu  
 85 90 95  
 Ser Lys Met Ile Glu Val Asp Asn Ala Leu Asp Ile Ser Leu Gly Leu  
 100 105 110  
 Asn Asn Phe Asp His His Lys Ser  
 115 120

<210> 48  
 <211> 136  
 <212> PRT  
 <213> Staphylococcus aureus

<400> 48  
 Met Ile Arg Arg Gly Asp Val Tyr Leu Ala Asp Leu Ser Pro Val Gln  
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 Gly Ser Glu Gln Gly Gly Val Arg Pro Val Val Ile Ile Gln Asn Asp  
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 Thr Gly Asn Lys Tyr Ser Pro Thr Val Ile Val Ala Ala Ile Thr Gly  
 35 40 45  
 Arg Ile Asn Lys Ala Lys Ile Pro Thr His Val Glu Ile Glu Lys Lys  
 50 55 60  
 Lys Tyr Lys Leu Asp Lys Asp Ser Val Ile Leu Leu Glu Gln Ile Arg  
 65 70 75 80  
 Thr Leu Asp Lys Lys Arg Leu Lys Glu Lys Leu Thr Tyr Leu Ser Asp  
 85 90 95  
 Asp Lys Met Lys Glu Val Asp Asn Ala Leu Met Ile Ser Leu Gly Leu  
 100 105 110  
 Asn Ala Val Ala Gln Pro Glu Lys Leu Gly Val Tyr Tyr Met Tyr Phe  
 115 120 125  
 Ser Glu Ile Asn Lys Ile Leu Ile  
 130 135

<210> 49  
 <211> 116  
 <212> PRT  
 <213> Bacillus subtilis

<400> 49  
 Met Ile Val Lys Arg Gly Asp Val Tyr Phe Ala Asp Leu Ser Pro Val  
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 Asp Ile Gly Asn Arg Phe Ser Pro Thr Ala Ile Val Ala Ala Ile Thr  
 35 40 45  
 Ala Gln Ile Gln Lys Ala Lys Leu Pro Thr His Val Glu Ile Asp Ala  
 50 55 60  
 Lys Arg Tyr Gly Phe Glu Arg Asp Ser Val Ile Leu Leu Glu Gln Ile  
 65 70 75 80  
 Arg Thr Ile Asp Lys Gln Arg Leu Thr Asp Lys Ile Thr His Leu Asp  
 85 90 95  
 Asp Glu Met Met Asp Lys Val Asp Glu Ala Leu Gln Ile Ser Leu Ala  
 100 105 110  
 Leu Ile Asp Phe  
 115

<210> 50  
 <211> 115  
 <212> PRT  
 <213> Neisseria meningitides

<400> 50  
 Met Tyr Ile Pro Asp Lys Gly Asp Ile Phe His Leu Asn Phe Asp Pro  
 1 5 10 15  
 Ser Ser Gly Lys Glu Ile Lys Gly Gly Arg Phe Ala Leu Ala Leu Ser  
 20 25 30  
 Pro Lys Ala Phe Asn Arg Ala Thr Gly Leu Val Phe Ala Cys Pro Ile  
 35 40 45  
 Ser Gln Gly Asn Ala Ala Ala Arg Ser Ser Gly Met Ile Ser Thr  
 50 55 60  
 Leu Leu Gly Ala Gly Thr Glu Thr Gln Gly Asn Val His Cys His Gln  
 65 70 75 80  
 Leu Lys Ser Leu Asp Trp Gln Ile Arg Lys Ala Ser Phe Lys Glu Thr  
 85 90 95  
 Val Pro Asp Tyr Val Leu Asp Asp Val Leu Ala Arg Ile Gly Ala Val  
 100 105 110  
 Leu Phe Asp  
 115

<210> 51  
 <211> 121  
 <212> PRT  
 <213> Morganella morganii

<400> 51  
 Met Arg Arg Arg Leu Val Arg Arg Lys Ser Asp Met Glu Arg Gly Glu  
 1 5 10 15  
 Ile Trp Leu Val Ser Leu Asp Pro Thr Ala Gly His Glu Gln Gln Gly  
 20 25 30  
 Thr Arg Pro Val Leu Ile Val Thr Pro Ala Ala Phe Asn Arg Val Thr  
 35 40 45  
 Arg Leu Pro Val Val Val Pro Val Thr Ser Gly Gly Asn Phe Ala Arg  
 50 55 60  
 Thr Ala Gly Phe Ala Val Ser Leu Asp Gly Ala Gly Ile Arg Thr Thr  
 65 70 75 80  
 Gly Val Val Arg Cys Asp Gln Pro Arg Thr Ile Asp Met Lys Ala Arg  
 85 90 95  
 Gly Gly Lys Arg Leu Glu Arg Val Pro Glu Thr Ile Met Asp Asp Val  
 100 105 110  
 Leu Gly Arg Leu Ala Thr Ile Leu Thr  
 115 120

<210> 52  
 <211> 118  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 52  
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 Val Pro Val Thr Ser Asn 35 Ile Ala Lys Val Tyr Pro Phe Gln Val Leu  
 Leu Ser Ala Thr Thr Thr 40 Gly Leu Gln Val Asp 45 Cys Lys Ala Gln Ala  
 50 55 60  
 Glu Gln Ile Arg Ser 65 Ile Ala Thr Glu Arg 70 Leu Leu Arg Pro Ile 75 Gly  
 Arg Val Ser Ala Ala Glu Leu Ala Gln Leu Asp Glu Ala Leu Lys Leu  
 80 85 90 95  
 His Leu Asp 100 Leu Trp Ser 105 110 115

<210> 53  
 <211> 243  
 <212> DNA  
 <213> *Deinococcus radiodurans*

<400> 53  
 atgacgagtc aaattcagaa atggggcaac agcctcgcgc tccgcattcc caaagctctg 60  
 gcgcagcagg tgggactgac gcagagttca gaagtggagc tgcttcttca ggacggtcag 120  
 attgtcatcc ggccagttcc tgctcggcag tacgatctcg ccgcgctgct ggccgaaatg 180  
 acacctgaaa atctgcatgg ggaaacagac tggggcgcac tggaaggacg cgaggaatgg 240  
 taa 243

<210> 54  
 <211> 246  
 <212> DNA  
 <213> *Bacillus halodurans*

<400> 54  
 gtgacactca tgactactat acaaaaagtg ggaaatagtt tagctgttcg tattccgaac 60  
 cattatgcta aacatattaa cgttacgcaa ggatctgaaa ttgaactaag cttagggagt 120  
 gatcaaacga ttatttttaa gcctaaaaaa agaaagccaa cattagagga attagtggca 180  
 aaaatcactc ctgaaaacag acataacgaa attgatttcg ggagaacagg aaaggaattg 240  
 ttgtaa 246

<210> 55  
 <211> 258  
 <212> DNA  
 <213> *E. coli* Plasmid R100

<400> 55  
 atgcatacca cccgactgaa gaggggttggc ggctcagtta tgctgaccgt cccaccggca 60  
 ctgctgaatg cgctgtctct gggcacagat aatgaagttg gcatgggtcat tgataatggc 120  
 cggctgattg ttgagccgta cagacgcccg caatattcac tggctgagct actggcacag 180  
 tgtgatccga atgctgaaat atcagctgaa gaacgagaat ggctggatgc accggcgact 240  
 ggtcaggagg aaatctga 258

<210> 56  
 <211> 294  
 <212> DNA  
 <213> *E. coli* Plasmid R466b

<400> 56

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atgttatatt taaatataac ttttatggag ggaaaaaatgc ataccactcg actgaagaag 60
gttggcggct cagtcatgct gaccgtccca ccggcactgc tgaatgcgct gtcgctgggt 120
acagataatg aagttggcat ggtcattgat aatggccggc tgatttgga gccgcacaga 180
cgcccgcagt attcactggc tgagctgttg gcacagtgcg atccgaacgc tgaaatctcg 240
gcagaagaac gtgaatggct ggatgcgccg gcggctggtc aggaggaaat ctga 294

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<210> 57

<211> 258

<212> DNA

<213> Escherichia coli

<400> 57

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gtgcagatgc gtattaccat aaaaagatgg gggaacagtg caggtatggt cattcccaat 60
atcgtaatga aagaacttaa cttacagccg gggcagagcg tgaagtga ggtgagcaac 120
aaccaactga ttctgacacc catctccagg cgctactcgc ttgatgaact gctggcacag 180
tgtgacatga acgccgcgga acttagcgag caggatgtct ggggtaaatc caccctgcg 240
ggtgacgaaa tatggtaa 258

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<210> 58

<211> 255

<212> DNA

<213> Pseudomonas putida

<400> 58

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atgcagatca agattcaaca gtggggcaac agcggccgca tccgcttgcc cgccgcagta 60
ctcaagcaga tgcgcctcgg tctcggctcc accctgagcc ttgacacaac gggtgagacg 120
atggtgctca aaccgcgcag gtcgaaaccc aagtacacc ttgaggaact gatggcccag 180
tgtgacctga gtgcaccgga gccagaggac atggccgact ggaatgccat gcgccagtg 240
gggcgtgaag tgtga 255

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<210> 59

<211> 260

<212> DNA

<213> Photobacterium profundum

<400> 59

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gtgcaatgag aactcagata agaaagatcg gtaactcact tggttcaatt attcctgcca 60
cttttattcg tcagcttgaa ctggcagagg gcgcagaaat tgatgttaaa acggttgatg 120
gaaaaattgt gattgagcca attagaaaaa tgaaaaaacg tttccattc agtgagcgtg 180
aattactaag tggattggat gcacacactg ctcatgtcta cgaactggtt gtaatttcta 240
cccaggagct aggcgataa 260

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<210> 60

<211> 80

<212> PRT

<213> Deinococcus radiodurans

<400> 60

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Met Thr Ser Gln Ile Gln Lys Trp Gly Asn Ser Leu Ala Leu Arg Ile
1      5      10      15
Pro Lys Ala Leu Ala Gln Gln Val Gly Leu Thr Gln Ser Ser Glu Val
20     25     30
Glu Leu Leu Leu Gln Asp Gly Gln Ile Val Ile Arg Pro Val Pro Ala
35     40     45
Arg Gln Tyr Asp Leu Ala Ala Leu Leu Ala Glu Met Thr Pro Glu Asn
50     55     60
Leu His Gly Glu Thr Asp Trp Gly Ala Leu Gly Arg Glu Glu Trp
65     70     75     80

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<210> 61  
 <211> 81  
 <212> PRT  
 <213> Bacillus halodurans

<400> 61  
 Met Thr Leu Met Thr Thr Ile Gln Lys Trp Gly Asn Ser Leu Ala Val  
 1 5 10 15  
 Arg Ile Pro Asn His Tyr Ala Lys His Ile Asn Val Thr Gln Gly Ser  
 20 25 30  
 Glu Ile Glu Leu Ser Leu Gly Ser Asp Gln Thr Ile Ile Leu Lys Pro  
 35 40 45  
 Lys Lys Arg Lys Pro Thr Leu Glu Glu Leu Val Ala Lys Ile Thr Pro  
 50 55 60  
 Glu Asn Arg His Asn Glu Ile Asp Phe Gly Arg Thr Gly Lys Glu Leu  
 65 70 75 80  
 Leu

<210> 62  
 <211> 85  
 <212> PRT  
 <213> E. coli PemI plasmid R100

<400> 62  
 Met His Thr Thr Arg Leu Lys Arg Val Gly Gly Ser Val Met Leu Thr  
 1 5 10 15  
 Val Pro Pro Ala Leu Leu Asn Ala Leu Ser Leu Gly Thr Asp Asn Glu  
 20 25 30  
 Val Gly Met Val Ile Asp Asn Gly Arg Leu Ile Val Glu Pro Tyr Arg  
 35 40 45  
 Arg Pro Gln Tyr Ser Leu Ala Glu Leu Leu Ala Gln Cys Asp Pro Asn  
 50 55 60  
 Ala Glu Ile Ser Ala Glu Glu Arg Glu Trp Leu Asp Ala Pro Ala Thr  
 65 70 75 80  
 Gly Gln Glu Glu Ile  
 85

<210> 63  
 <211> 97  
 <212> PRT  
 <213> E. coli PemI plasmid R466b

<400> 63  
 Met Leu Tyr Leu Asn Ile Thr Phe Met Glu Gly Lys Met His Thr Thr  
 1 5 10 15  
 Arg Leu Lys Lys Val Gly Gly Ser Val Met Leu Thr Val Pro Pro Ala  
 20 25 30  
 Leu Leu Asn Ala Leu Ser Leu Gly Thr Asp Asn Glu Val Gly Met Val  
 35 40 45  
 Ile Asp Asn Gly Arg Leu Ile Val Glu Pro His Arg Arg Pro Gln Tyr  
 50 55 60  
 Ser Leu Ala Glu Leu Leu Ala Gln Cys Asp Pro Asn Ala Glu Ile Ser  
 65 70 75 80  
 Ala Glu Glu Arg Glu Trp Leu Asp Ala Pro Ala Ala Gly Gln Glu Glu  
 85 90 95  
 Ile

<210> 64

<211> 85  
 <212> PRT  
 <213> Escherichia coli

<400> 64  
 Met Gln Met Arg Ile Thr Ile Lys Arg Trp Gly Asn Ser Ala Gly Met  
 1 5 10 15  
 Val Ile Pro Asn Ile Val Met Lys Glu Leu Asn Leu Gln Pro Gly Gln  
 20 25 30  
 Ser Val Glu Ala Gln Val Ser Asn Asn Gln Leu Ile Leu Thr Pro Ile  
 35 40 45  
 Ser Arg Arg Tyr Ser Leu Asp Glu Leu Leu Ala Gln Cys Asp Met Asn  
 50 55 60  
 Ala Ala Glu Leu Ser Glu Gln Asp Val Trp Gly Lys Ser Thr Pro Ala  
 65 70 75 80  
 Gly Asp Glu Ile Trp  
 85

<210> 65  
 <211> 84  
 <212> PRT  
 <213> Pseudomonas putida

<400> 65  
 Met Gln Ile Lys Ile Gln Gln Trp Gly Asn Ser Ala Ala Ile Arg Leu  
 1 5 10 15  
 Pro Ala Ala Val Leu Lys Gln Met Arg Leu Gly Val Gly Ser Thr Leu  
 20 25 30  
 Ser Leu Asp Thr Thr Gly Glu Thr Met Val Leu Lys Pro Val Arg Ser  
 35 40 45  
 Lys Pro Lys Tyr Thr Leu Glu Glu Leu Met Ala Gln Cys Asp Leu Ser  
 50 55 60  
 Ala Pro Glu Pro Glu Asp Met Ala Asp Trp Asn Ala Met Arg Pro Val  
 65 70 75 80  
 Gly Arg Glu Val

<210> 66  
 <211> 85  
 <212> PRT  
 <213> Photobacterium profundum

<400> 66  
 Ala Met Arg Thr Gln Ile Arg Lys Ile Gly Asn Ser Leu Gly Ser Ile  
 1 5 10 15  
 Ile Pro Ala Thr Phe Ile Arg Gln Leu Glu Leu Ala Glu Gly Ala Glu  
 20 25 30  
 Ile Asp Val Lys Thr Val Asp Gly Lys Ile Val Ile Glu Pro Ile Arg  
 35 40 45  
 Lys Met Lys Lys Arg Phe Pro Phe Ser Glu Arg Glu Leu Leu Ser Gly  
 50 55 60  
 Leu Asp Ala His Thr Ala His Ala Asp Glu Leu Val Val Ile Ser Thr  
 65 70 75 80  
 Gln Glu Leu Gly Glu  
 85

<210> 67  
 <211> 228  
 <212> DNA  
 <213> Homo sapiens



>  
 <400> 67  
 atgggtccag catctgttcc gactacctgt tgctttaacc tggcgaaccg caaaattccg 60  
 ctgcagcgcc tggaaaagcta tcgccgtatt acctctggca aatgcccgcg gaaagcggcg 120  
 atctttaaaa ccaaactggc gaaagatatt tgcgcggatc cgaaaaaaa atgggtgcag 180  
 gattctatga aatatctgga tcagaaatct ccgaccccga aaccgtaa 228

<210> 68  
 <211> 73  
 <212> PRT  
 <213> Homo sapiens

<400> 68  
 Gly Pro Ala Ser Pro Thr Thr Cys Cys Phe Asn Leu Ala Asn Arg Lys  
 1 5 10 15  
 Ile Pro Leu Gln Arg Leu Glu Ser Tyr Arg Arg Ile Thr Ser Gly Lys  
 20 25 30  
 Cys Pro Gln Lys Ala Val Ile Phe Lys Thr Lys Leu Ala Lys Asp Ile  
 35 40 45  
 Cys Ala Asp Pro Lys Lys Lys Trp Val Gln Asp Ser Met Lys Tyr Leu  
 50 55 60  
 Asp Gln Lys Ser Pro Thr Pro Lys Pro  
 65 70

<210> 69  
 <211> 357  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 69  
 gtgatgcgcc gcggtgagat ttggcaggct gatctcgacc ccgctcgagg tagcgaagcg 60  
 aacaaccagc gccccgcgct cgctcgtcagc aacgaccggg ccaacgcgac cgccacgcgt 120  
 cttgggcgcg gcgtcatcac cgctcgtgccg gtgacgagca acatcgccaa ggtctatccg 180  
 tttcagggtg tgttgtcggc caccactact ggtctccagg tcgactgcaa ggcgcaggcc 240  
 gagcaaatca gatcgattgc taccgagcgg ttgctccggc caatcggccg agtttcagcc 300  
 gccgaacttg cccagctcga tgaggccttg aaactgcac tcgacttatg gtcgtag 357

<210> 70  
 <211> 282  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 70  
 atgctgcgcg gtgagatctg gcaggctcgac ctggatccgg cccgcggcag cgcgggcaa 60  
 atgcggcggc cagcggtaat tgtcagcaac gacagggcca acgctgccgc gatacgtctc 120  
 gaccgaggcg tgggtccggt tgtcccgggt accagcaaca ccgaaaaggc cccattcca 180  
 ggtgtgtgtg ccggcagcga gcggtggcct ggccgtcgat tcgaaggcgc aggcccagca 240  
 ggttgatcc gtcgctgcgc aacgtctccc ctgccgagct ga 282

<210> 71  
 <211> 345  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 71  
 gtggtgatta gtcgtgccga gatctactgg gctgacctcg ggccgccatc aggcagtcag 60  
 ccggcgaaag gccgcccggg gctcgtaatc cagtcagatc cgtacaacgc aagtcgcctt 120  
 gccactgtga tcgcagcggg gatcacgtcc aatacggcgc tggcggcaat gcccggaac 180  
 gtgttcttgc ccgcgaccac aacgcgactg ccacgtgact cggctcgtcaa cgtcacggcg 240

attg<sup>1</sup>acgc tcaacaagac tgacctcacc gaccgagttg gggagggtgcc agcgagcttg 300  
atgcacgagg ttgaccgagg acttcgtcgc gtactggacc ttga 345

<210> 72

<211> 309

<212> DNA

<213> Mycobacterium tuberculosis

<400> 72

atgcggcgcg gtgaattgtg gtttgccgcc acacctgggtg gtgacagacc agtacttgtc 60  
cttaccagag atccgggtggc agaccgcatc ggcgcgggtcg ttgtgggtggc cctaaccgcg 120  
acccgccgag gcctgggtgtc ggaattggag ctacacggccg tcgaaaaccg tggtccgagc 180  
gactgctgcg tcaacttcga caacattcat acgttgccac gcaccgcatt ccgacgccgc 240  
atcaccggcg tgtccccggc ccgcctgcac gaagcctgtc aaacactccg ggcgagcacg 300  
gggtgttga 309

<210> 73

<211> 330

<212> DNA

<213> Mycobacterium tuberculosis

<400> 73

gtgaccgcac ttccggcgcg cggagaggtg tgggtggtgtg agatggctga gatcggtcgg 60  
cgaccagtgc tcgtgctgtc gcgcgatgcc gcgatccctc ggctgcgacg cgcacttgtc 120  
gcgccttgca ccacgaccat ccgaggggcta gccagtgagg ttgttcttga acccggttcc 180  
gacccgatcc cgcgccgttc cgcggtgaat ttggactcag tcgaaagtgt ctcggtcgcg 240  
gtattggtga atcggccttg ccgcctcgcc gacatccgga tgcgcgccat ctgcacggcc 300  
ctcgaggtcg ccgtcgattg ctctcgatga 330

<210> 74

<211> 118

<212> PRT

<213> Mycobacterium tuberculosis

<400> 74

Met	Met	Arg	Arg	Gly	Glu	Ile	Trp	Gln	Val	Asp	Leu	Asp	Pro	Ala	Arg
1				5					10					15	
Gly	Ser	Glu	Ala	Asn	Asn	Gln	Arg	Pro	Ala	Val	Val	Val	Ser	Asn	Asp
			20					25					30		
Arg	Ala	Asn	Ala	Thr	Ala	Thr	Arg	Leu	Gly	Arg	Gly	Val	Ile	Thr	Val
		35					40					45			
Val	Pro	Val	Thr	Ser	Asn	Ile	Ala	Lys	Val	Tyr	Pro	Phe	Gln	Val	Leu
	50					55				60					
Leu	Ser	Ala	Thr	Thr	Thr	Gly	Leu	Gln	Val	Asp	Cys	Lys	Ala	Gln	Ala
65					70				75					80	
Glu	Gln	Ile	Arg	Ser	Ile	Ala	Thr	Glu	Arg	Leu	Leu	Arg	Pro	Ile	Gly
			85					90					95		
Arg	Val	Ser	Ala	Ala	Glu	Leu	Ala	Gln	Leu	Asp	Glu	Ala	Leu	Lys	Leu
			100				105						110		
His	Leu	Asp	Leu	Trp	Ser										
	115														

<210> 75

<211> 93

<212> PRT

<213> Mycobacterium tuberculosis

<400> 75

Met	Leu	Arg	Gly	Glu	Ile	Trp	Gln	Val	Asp	Leu	Asp	Pro	Ala	Arg	Gly
1				5					10					15	
Ser	Ala	Ala	Asn	Met	Arg	Arg	Pro	Ala	Val	Ile	Val	Ser	Asn	Asp	Arg
			20				25						30		

Ala Asn Ala Ala Ala Ile Arg Leu Asp Arg Gly Val Val Pro Val Val  
 35 40 45  
 Pro Val Thr Ser Asn Thr Glu Lys Val Pro Ile Pro Gly Val Val Ala  
 50 55 60  
 Gly Ser Glu Arg Trp Pro Gly Arg Arg Phe Glu Gly Ala Gly Pro Ala  
 65 70 75 80  
 Gly Trp Ile Arg Arg Cys Ala Thr Ser Pro Leu Pro Ser  
 85 90

<210> 76

<211> 114

<212> PRT

<213> Mycobacterium tuberculosis

<400> 76

Met Val Ile Ser Arg Ala Glu Ile Tyr Trp Ala Asp Leu Gly Pro Pro  
 1 5 10 15  
 Ser Gly Ser Gln Pro Ala Lys Arg Arg Pro Val Leu Val Ile Gln Ser  
 20 25 30  
 Asp Pro Tyr Asn Ala Ser Arg Leu Ala Thr Val Ile Ala Val Ile  
 35 40 45  
 Thr Ser Asn Thr Ala Leu Ala Ala Met Pro Gly Asn Val Phe Leu Pro  
 50 55 60  
 Ala Thr Thr Thr Arg Leu Pro Arg Asp Ser Val Val Asn Val Thr Ala  
 65 70 75 80  
 Ile Val Thr Leu Asn Lys Thr Asp Leu Thr Asp Arg Val Gly Glu Val  
 85 90 95  
 Pro Ala Ser Leu Met His Glu Val Asp Arg Gly Leu Arg Arg Val Leu  
 100 105 110  
 Asp Leu

<210> 77

<211> 102

<212> PRT

<213> Mycobacterium tuberculosis

<400> 77

Met Arg Arg Gly Glu Leu Trp Phe Ala Ala Thr Pro Gly Gly Asp Arg  
 1 5 10 15  
 Pro Val Leu Val Leu Thr Arg Asp Pro Val Ala Asp Arg Ile Gly Ala  
 20 25 30  
 Val Val Val Val Ala Leu Thr Arg Arg Gly Leu Val Ser Glu  
 35 40 45  
 Leu Glu Leu Thr Ala Val Glu Asn Arg Val Pro Ser Asp Cys Val Val  
 50 55 60  
 Asn Phe Asp Asn Ile His Thr Leu Pro Arg Thr Ala Phe Arg Arg Arg  
 65 70 75 80  
 Ile Thr Arg Leu Ser Pro Ala Arg Leu His Glu Ala Cys Gln Thr Leu  
 85 90 95  
 Arg Ala Ser Thr Gly Cys  
 100

<210> 78

<211> 109

<212> PRT

<213> Mycobacterium tuberculosis

<400> 78

Met Thr Ala Leu Pro Ala Arg Gly Glu Val Trp Trp Cys Glu Met Ala  
 1 5 10 15

Glu Ile Gly Arg Arg Pro Val Val Val Leu Ser Arg Asp Ala Ala Ile  
 20 25 30  
 Pro Arg Leu Arg Arg Ala Leu Val Ala Pro Cys Thr Thr Ile Arg  
 35 40 45  
 Gly Leu Ala Ser Glu Val Val Leu Glu Pro Gly Ser Asp Pro Ile Pro  
 50 55 60  
 Arg Arg Ser Ala Val Asn Leu Asp Ser Val Glu Ser Val Ser Val Ala  
 65 70 75 80  
 Val Leu Val Asn Arg Leu Gly Arg Leu Ala Asp Ile Arg Met Arg Ala  
 85 90 95  
 Ile Cys Thr Ala Leu Glu Val Ala Val Asp Cys Ser Arg  
 100 105

<210> 79  
 <211> 351  
 <212> DNA  
 <213> *Bacillus anthracis*

<400> 79  
 ttgattgttaa aacgcggcga cgtgtatatt gcagaccttt cccagttgt tggttctgag 60  
 caaggagggtg ttcgtccggt tctgttcatt caaatgaca tcggaaatcg ttttagtcca 120  
 acggtgattg tagcggctat tactgcacag attcaaaaag cgaaattacc cactcatgtg 180  
 gaaattgatg cgaaaaagta cggttttgag agagattctg ttattttact tgagcagatt 240  
 cgaacaatcg ataagcagcg cttaacggac aaaatcactc acttagatga agtgaatgatg 300  
 attcgtgtag atgaagcgct acaaattagt ttaggactaa tagattttta a 351

<210> 80  
 <211> 116  
 <212> PRT  
 <213> *Bacillus anthracis*

<400> 80  
 Met Ile Val Lys Arg Gly Asp Val Tyr Phe Ala Asp Leu Ser Pro Val  
 1 5 10 15  
 Val Gly Ser Glu Gln Gly Gly Val Arg Pro Val Leu Val Ile Gln Asn  
 20 25 30  
 Asp Ile Gly Asn Arg Phe Ser Pro Thr Val Ile Val Ala Ala Ile Thr  
 35 40 45  
 Ala Gln Ile Gln Lys Ala Lys Leu Pro Thr His Val Glu Ile Asp Ala  
 50 55 60  
 Lys Lys Tyr Gly Phe Glu Arg Asp Ser Val Ile Leu Leu Glu Gln Ile  
 65 70 75 80  
 Arg Thr Ile Asp Lys Gln Arg Leu Thr Asp Lys Ile Thr His Leu Asp  
 85 90 95  
 Glu Val Met Met Ile Arg Val Asp Glu Ala Leu Gln Ile Ser Leu Gly  
 100 105 110  
 Leu Ile Asp Phe  
 115

<210> 81  
 <211> 348  
 <212> DNA  
 <213> *Pseudomonas putida*

<400> 81  
 gtgaaacggt tgaaattcgc caggggtgat attgttcgcg tcaacctgga cccaacagtc 60  
 gggcggaac agcagggctc cggccgacct gcactggtac ttactccggc tgcgttcaat 120  
 gcttcaggcc tggctgtaat catcccgatc actcaagggtg gggatttcgc gaggcacatgc 180  
 ggtttcgctg tcacgctcag cgggtgcgggc acgcagactc aggggggtgat gctttgcaac 240  
 caggtgcgca cagtcgacct tgaagcacga ttgccaagc gcatagagtc ggtgcctgaa 300  
 gctgtcatcc tggatgcact ggcgcgtgtg caaaccttat tcgattaa 348

<210> 82  
 <211> 345  
 <212> DNA  
 <213> Mycobacterium celatum

<400> 82  
 tgaattgctc tgacggaacg cggcgacatc tacatcgttt cgcttgaccc gacgtcggga 60  
 catgagcaga gcggcacgcg cccagtattg gtcgtgtccc cgggcgcggt taatcgccctg 120  
 acgaaaacac cggtcgtgct acctataaca cgcggcggga actttgcccg aacggcaggg 180  
 ttcgctgtct cgctgaccga tgcgggtact cgcaccgccg gcgtaatacg ctgcatcag 240  
 cctcgctcga ttgatatccg cgcccgtaaa ggccgcaagg ttgaacgtgt gccgtctggg 300  
 gttcttgacg aagcgttggc caagctcgcc acgatcttga cttga 345

<210> 83  
 <211> 366  
 <212> DNA  
 <213> Shigella flexneri 2a str. 301

<400> 83  
 atggtaaagg cacggacgcc acatcgtggt gagatctggt attttaaccc tgatccggtt 60  
 gccgggcatg aacttcaggg gccacattat tgcattgtgg taacggacaa aaaactcaac 120  
 aatgttttaa aagttgctat gtgctgcccc atttcaacag gggcaaatgc agcacgttcc 180  
 acaggggtga cggtgaaagt cctcccccg gatacgcaaa ccggtaacct gcatggcggt 240  
 gtactttgtc accagctaaa agccgtcgat cttattgccc gtggcgctaa atttcatacc 300  
 gttgccgatg aaaaattgat tagtgaagtt atcagtaaac tggatgaatt aatcgaccca 360  
 caataa 366

<210> 84  
 <211> 351  
 <212> DNA  
 <213> E. coli

<400> 84  
 atggtaaaga aaagtgaatt tgaacgggga gacattgtgc tggttggcct tgatccagca 60  
 agcggccatg aacagcaagg tgctggtcga cctgcgcttg tgctctccgt tcaagccttt 120  
 aatcaactgg gaatgacgct ggtggcccc attacgcagg gcggaaattt tgcccgttat 180  
 gccggattta gcgttccttt acattgcgaa gaaggcgatg tgcacggcgt ggtgctgggt 240  
 aatcaggtgc ggatgatgga tctacacgcc cggctggcaa agcgtattgg tctggctgcg 300  
 gatgaggtgg tggaaagagg gttattacgc ttgcaggcgg tggatgaata a 351

<210> 85  
 <211> 115  
 <212> PRT  
 <213> Pseudomonas putida

<400> 85  
 Met Lys Arg Leu Lys Phe Ala Arg Gly Asp Ile Val Arg Val Asn Leu  
 1 5 10 15  
 Asp Pro Thr Val Gly Arg Glu Gln Gln Gly Ser Gly Arg Pro Ala Leu  
 20 25 30  
 Val Leu Thr Pro Ala Ala Phe Asn Ala Ser Gly Leu Ala Val Ile Ile  
 35 40 45  
 Pro Ile Thr Gln Gly Gly Asp Phe Ala Arg His Ala Gly Phe Ala Val  
 50 55 60  
 Thr Leu Ser Gly Ala Gly Thr Gln Thr Gln Gly Val Met Leu Cys Asn  
 65 70 75 80  
 Gln Val Arg Thr Val Asp Leu Glu Ala Arg Phe Ala Lys Arg Ile Glu  
 85 90 95  
 Ser Val Pro Glu Ala Val Ile Leu Asp Ala Leu Ala Arg Val Gln Thr  
 100 105 110  
 Leu Phe Asp  
 115

<210> 86  
 <211> 111  
 <212> PRT  
 <213> Mycobacterium celatum

<400> 86  
 Met Thr Glu Arg Gly Asp Ile Tyr Ile Val Ser Leu Asp Pro Thr Ser  
 1 5 10 15  
 Gly His Glu Gln Ser Gly Thr Arg Pro Val Leu Val Val Ser Pro Gly  
 20 25 30  
 Ala Phe Asn Arg Leu Thr Lys Thr Pro Val Val Leu Pro Ile Thr Arg  
 35 40 45  
 Gly Gly Asn Phe Ala Arg Thr Ala Gly Phe Ala Val Ser Leu Thr Asp  
 50 55 60  
 Ala Gly Thr Arg Thr Ala Gly Val Ile Arg Cys Asp Gln Pro Arg Ser  
 65 70 75 80  
 Ile Asp Ile Arg Ala Arg Lys Gly Arg Lys Val Glu Arg Val Pro Ser  
 85 90 95  
 Gly Val Leu Asp Glu Ala Leu Ala Lys Leu Ala Thr Ile Leu Thr  
 100 105 110

<210> 87  
 <211> 121  
 <212> PRT  
 <213> Shigella flexneri 2a str. 301

<400> 87  
 Met Val Lys Ala Arg Thr Pro His Arg Gly Glu Ile Trp Tyr Phe Asn  
 1 5 10 15  
 Pro Asp Pro Val Ala Gly His Glu Leu Gln Gly Pro His Tyr Cys Ile  
 20 25 30  
 Val Val Thr Asp Lys Lys Leu Asn Asn Val Leu Lys Val Ala Met Cys  
 35 40 45  
 Cys Pro Ile Ser Thr Gly Ala Asn Ala Ala Arg Ser Thr Gly Val Thr  
 50 55 60  
 Val Asn Val Leu Pro Arg Asp Thr Gln Thr Gly Asn Leu His Gly Val  
 65 70 75 80  
 Val Leu Cys His Gln Leu Lys Ala Val Asp Leu Ile Ala Arg Gly Ala  
 85 90 95  
 Lys Phe His Thr Val Ala Asp Glu Lys Leu Ile Ser Glu Val Ile Ser  
 100 105 110  
 Lys Leu Val Asn Leu Ile Asp Pro Gln  
 115 120

<210> 88  
 <211> 116  
 <212> PRT  
 <213> E. coli

<400> 88  
 Met Val Lys Lys Ser Glu Phe Glu Arg Gly Asp Ile Val Leu Val Gly  
 1 5 10 15  
 Phe Asp Pro Ala Ser Gly His Glu Gln Gln Gly Ala Gly Arg Pro Ala  
 20 25 30  
 Leu Val Leu Ser Val Gln Ala Phe Asn Gln Leu Gly Met Thr Leu Val  
 35 40 45

Ala Pro Ile Thr Gln Gly Gly Asn Phe Ala Arg Tyr Ala Gly Phe Ser  
50 55 60  
Val Pro Leu His Cys Glu Gly Asp Val His Gly Val Val Leu Val  
65 70 75 80  
Asn Gln Val Arg Met Met Asp Leu His Ala Arg Leu Ala Lys Arg Ile  
85 90 95  
Gly Leu Ala Ala Asp Glu Val Val Glu Glu Ala Leu Leu Arg Leu Gln  
100 105 110  
Ala Val Val Glu  
115

<210> 89

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic oligonucleotide

<400> 89

aatgatgaca ctggaag

17

<210> 90

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic oligonucleotide

<400> 90

gtcgttgaca ttgatgg

17

<210> 91

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic oligonucleotide

<400> 91

atctcgaaca cgcagcc

17

<210> 92

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic oligonucleotide

<400> 92

tcgttttaca cccttga

17